

IN THE CLAIMS

1-5. (Cancelled).

6. (Currently Amended) A ~~The~~ method for ~~of claim 5~~, controlling a lens group having a focus lens and a zoom lens group along an optical axis, where the zoom lens group includes at least one zoom lens, comprising:

receiving input to change position of the focus lens;

separately controlling positions of the focus lens and the zoom lens group

along the optical axis such that the focus lens and the zoom lens

approach no closer to one another than a selected minimum safe

distance, for any selected magnification provided by the zoom lens

group and the focus lens, said separately controlling comprising

determining initial position of the at least one zoom lens, said

separately controlling comprising determining a permissible working range;

moving the focus lens to a best focus position within said permissible working range;

wherein said moving the focus lens to the best focus position within said permissible working range comprises:

selecting a focus figure of merit;

moving the focus lens in one direction along the optical axis;

tracking the position of the focus lens along the optical axis;

if the focus figure of merit increases, moving the focus lens again in

said one direction to a final position that is no further than a

boundary of said permissible working range; and

if the focus figure of merit decreases, moving the focus lens again in a

direction opposite said one direction to a final position that is

no further than a boundary of said permissible working range.

7. (Original) The method of claim 6, wherein said final position substantially corresponds to a position on the optical axis where a peak value of said focus figure of merit is reached.

8. (Original) The method of claim 6, wherein said final position is a boundary of said permissible working range.

9-12. (Cancelled)

13. (Currently Amended) ~~A The method for of claim 12, further comprising: controlling a lens group having a focus lens and a zoom lens group along an optical axis, where the zoom lens group includes at least one zoom lens, comprising:~~

receiving input to change position of zoom lens group;

separately controlling positions of the focus lens and the zoom lens group

along the optical axis such that the focus lens and the zoom lens

approach no closer to one another than a selected minimum safe

distance, for any selected magnification provided by the zoom lens

group and the focus lens, said separately controlling comprising

determining initial position of at least one zoom lens;

moving at least one zoom lens a discrete amount along the optical axis to a

new position in a direction associated with said received input;

determining a permissible working range along the optical axis; and

moving the focus lens to ~~the~~ a best focus position within said permissible

working range, wherein the best focus position within said permissible

working range achieves focus ~~for said initial focal distance~~ at said new

position of said at least one zoom lens.

14. (Original) The method of claim 13, further comprising repeating said moving the zoom lens, said determining a permissible working range, and said moving the focus lens until at least one zoom lens has reached a final position associated with said received input.

15-16. (Cancelled)

17. (Currently Amended) A method for controlling a lens group having a focus lens and a zoom lens group along an optical axis, where the zoom lens group has a first zoom lens and a second zoom lens, comprising:

receiving input to change ~~the~~ position of the zoom lens group;

determining ~~the~~ initial position of the focus lens and the focal distance
associated with said initial position of the focus lens;
determining ~~the~~ initial position of the second zoom lens;
moving the second zoom lens a discrete amount along the optical axis to a new
position in ~~the~~ a direction associated with said step of receiving input;
determining a permissible working range along the optical axis;
for each selected magnification of the zoom lens group and focus lens, moving
the focus lens to ~~the~~ a best focus position within said permissible
working range, wherein the best focus position within said permissible
working range achieves focus at said new position of said second zoom
lens; and
repeating said moving the second zoom lens, said determining a permissible
working range and said moving the focus lens until the second zoom
lens has reached a final position associated with said step of receiving
input.